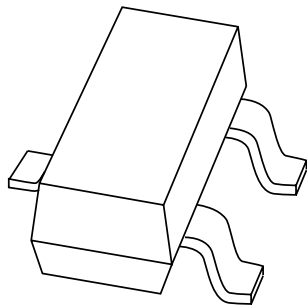


DATA SHEET



PMBT2907; PMBT2907A PNP switching transistors

Product data sheet
Supersedes data of 1999 Apr 27

2004 Jan 16

PNP switching transistors

PMBT2907; PMBT2907A

FEATURES

- High current (max. 600 mA)
- Low voltage (max. 60 V).

APPLICATIONS

- Switching and linear amplification.

DESCRIPTION

PNP switching transistor in a SOT23 plastic package.
NPN complements: PMBT2222 and PMBT2222A.

MARKING

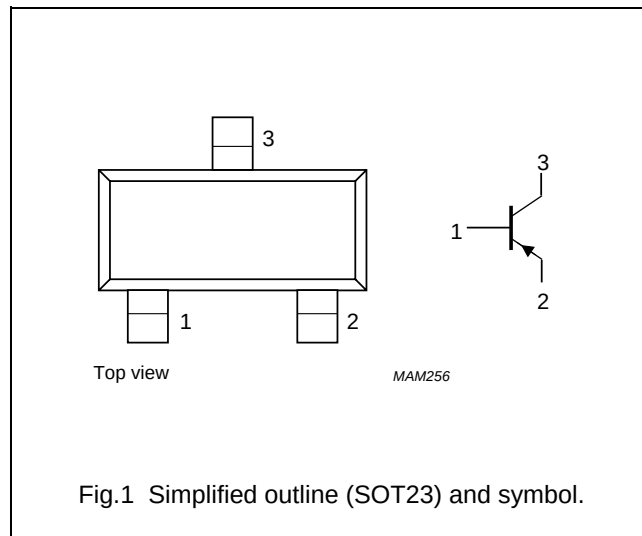
TYPE NUMBER	MARKING CODE ⁽¹⁾
PMBT2907	*2B
PMBT2907A	*2F

Note

- * = p : Made in Hong Kong.
* = t : Made in Malaysia.
* = W: Made in China.

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PMBT2907	–	plastic surface mounted package; 3 leads	SOT23
PMBT2907A	–	plastic surface mounted package; 3 leads	SOT23

PNP switching transistors

PMBT2907; PMBT2907A

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	–60	V
V_{CEO}	collector-emitter voltage PMBT2907 PMBT2907A	open base	–	–40	V
			–	–60	V
V_{EBO}	emitter-base voltage	open collector	–	–5	V
I_C	collector current (DC)		–	–600	mA
I_{CM}	peak collector current		–	–800	mA
I_{BM}	peak base current		–	–200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	–	250	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	500	K/W

Note

1. Transistor mounted on an FR4 printed-circuit board.

PNP switching transistors

PMBT2907; PMBT2907A

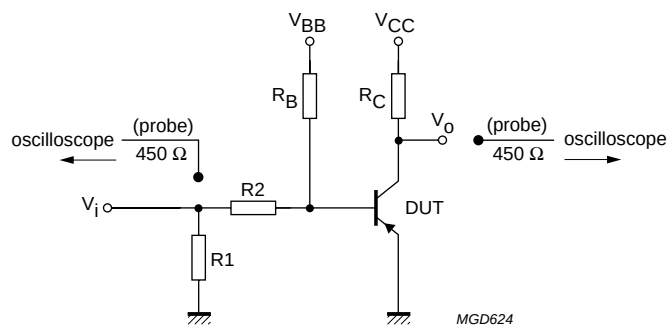
CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector-base cut-off current PMBT2907 PMBT2907A	$I_E = 0; V_{CB} = -50\text{ V}$	–	–20	nA
			–	–10	nA
	collector-base cut-off current PMBT2907 PMBT2907A	$I_E = 0; V_{CB} = -50\text{ V}; T_j = 125\text{ }^{\circ}\text{C}$	–	–20	μA
			–	–10	μA
I_{EBO}	emitter-base cut-off current	$I_C = 0; V_{EB} = -5\text{ V}$	–	–50	nA
h_{FE}	DC current gain PMBT2907 PMBT2907A	$I_C = -0.1\text{ mA}; V_{CE} = -10\text{ V}$	35 75	– –	
	DC current gain PMBT2907 PMBT2907A	$I_C = -1\text{ mA}; V_{CE} = -10\text{ V}$	50 100	– –	
	DC current gain PMBT2907 PMBT2907A	$I_C = -10\text{ mA}; V_{CE} = -10\text{ V}$	75 100	– –	
	DC current gain	$I_C = -150\text{ mA}; V_{CE} = -10\text{ V}$	100	300	
	DC current gain PMBT2907 PMBT2907A	$I_C = -500\text{ mA}; V_{CE} = -10\text{ V}$	30 50	– –	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -150\text{ mA}; I_B = -15\text{ mA}$	–	–400	mV
		$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	–1.6	V
V_{BEsat}	base-emitter saturation voltage	$I_C = -150\text{ mA}; I_B = -15\text{ mA}$	–	–1.3	V
		$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	–2.6	V
C_c	collector capacitance	$I_E = I_c = 0; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$	–	8	pF
C_e	emitter capacitance	$I_C = I_c = 0; V_{EB} = -2\text{ V}; f = 1\text{ MHz}$	–	30	pF
f_T	transition frequency	$I_C = -50\text{ mA}; V_{CE} = -20\text{ V}; f = 100\text{ MHz}$	200	–	MHz
Switching times (between 10% and 90% levels); (see Fig.2)					
t_{on}	turn-on time	$I_{Con} = -150\text{ mA}; I_{Bon} = -15\text{ mA};$ $I_{Boff} = 15\text{ mA}$	–	40	ns
t_d	delay time		–	12	ns
t_r	rise time		–	30	ns
t_{off}	turn-off time		–	365	ns
t_s	storage time		–	300	ns
t_f	fall time		–	65	ns

PNP switching transistors

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$V_i = -9.5 \text{ V}$; $T = 500 \text{ } \mu\text{s}$; $t_p = 10 \text{ } \mu\text{s}$; $t_r = t_f \leq 3 \text{ ns}$.
 $R_1 = 68 \text{ } \Omega$; $R_2 = 325 \text{ } \Omega$; $R_B = 325 \text{ } \Omega$; $R_C = 160 \text{ } \Omega$.
 $V_{BB} = 3.5 \text{ V}$; $V_{CC} = -29.5 \text{ V}$.
 Oscilloscope: input impedance $Z_i = 50 \text{ } \Omega$.

Fig.2 Test circuit for switching times.

PNP switching transistors

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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23

The diagrams illustrate the SOT23 package dimensions. The top view shows the overall width D and lead spacing e. The side view shows the maximum height A, lead height A1, and lead thickness c. The bottom view shows the lead pitch e1 and the distance from the lead center to the package edge b_p. A detail X shows the lead profile with dimensions L_p and Q. A scale bar indicates 0 to 2 mm.

DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT23		TO-236AB				04-11-04 06-03-16

PNP switching transistors

PMBT2907; PMBT2907A

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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NXP Semiconductors

Customer notification

This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

Contact information

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